BEFORE THE PUBLIC UTILITIES COMMISSION
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COMMENTS OF THE VEHICLE-GRID INTEGRATION COUNCIL ON VEHICLE TO GRID ALTERNATING CURRENT INTERCONNECTION SUBGROUP REPORT

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In accordance with Rules of Practice and Procedure of the California Public Utilities Commission ("Commission"), the Vehicle-Grid Integration Council ("VGIC")[1] hereby submits comments on the Vehicle-to-Grid ("V2G AC") Interconnection Technical Sub-Group Final Report ("Final Report") submitted in Rulemakings 17-07-007 and R. 18-12-006 on December 11, 2019. Pursuant to *Joint Administrative Law Judges' Ruling Establishing Subgroup and Schedule to Develop Proposal on Mobile Inverter Technical Requirements for Rule 21 and Noticing Workshop*, issued by Administrative Law Judges Kelly A. Hymes, Sasha Goldberg, and Patrick Doherty on August 23, 2019, VGIC timely files these comments on January 6, 2020 in R. 17-07-007 and 18-12-006. VGIC also previously filed a motion for party status in these proceedings on January 6, 2020.

[1] VGIC member companies and supporters include American Honda Motor Co., Inc., Enel X North America, Inc., Fiat Chrysler Automobiles, Ford Motor Company, General Motors Company, and Nuvve Corporation. The views expressed in these Comments are those of VGIC, and do not necessarily reflect the views of all of the individual VGIC member companies or supporters. (https://www.vgicouncil.org/).

I. INTRODUCTION

VGIC is a 501(c)6 membership-based advocacy group committed to advancing the role of electric vehicles ("EVs") and vehicle-grid integration ("VGI") through policy development, education, outreach, and research. VGIC supports the transition to a decarbonized transportation and electric sector by ensuring the value from EV deployments and flexible EV charging and discharging is recognized and compensated in support of achieving a more reliable, affordable, and efficient electric grid. VGIC appreciates the opportunity to participate in this proceeding to inform and shape the development of a pathway to V2G AC interconnection.

II. COMMENTS

VGIC commends the considerable effort made by stakeholders that contributed to the timely drafting of the Final Report submitted on December 11, 2019. In particular, the VGIC would like to thank the authors for including several items that reflect the input and perspective of the automotive manufacturers ("OEMs"), several of which are VGIC members.

VGIC believes this Final Report represents a significant step forward in establishing a clear pathway for V2G AC interconnection under the Rule 21 tariff, and ultimately towards greater provision of grid services from plug-in electric vehicles, ("PEVs") and increased PEV adoption. As the Commission weighs next steps, VGIC has specific comments regarding each of the two Recommendations included in the Final Report, which are detailed below.

A. Comments on Recommendation 1: Pre-conditions for Reconvening Subgroup

Consistent with Recommendation 1 of the Final Report, VGIC supports reconvening the subgroup in the July 2020 timeframe. During the December 17, 2019 subgroup workshop, there

appeared to be general consensus that a one-day workshop in July 2020 would be an appropriate path forward as a way to maintain the subgroup's momentum, without prematurely overcommitting resources to the process. VGIC supports this approach, as it would also allow sufficient time for further development of relevant SAE, UL, and IEEE standards, as outlined in Section 7A and 7B of the Final Report. VGIC members are actively involved in pursuing these updates and believe that this proposed timeline is appropriate. VGIC also agrees with Staff's suggestion that it may be helpful to identify a list of tasks that are expected to be accomplished prior to the July 2020 workshop. At a minimum, this list of tasks should include the identified updates to SAE J3072 and UL 9741. It could also include further actions surrounding pathways for OEM internal testing validation procedures (*i.e.*, "self-certification").

While additional time to accomplish these tasks is appropriate, it is important that action on V2G AC interconnection be resumed quickly. Meaningful progress on the development of V2G AC interconnection pathways has been impeded by the misconceived notion that policies to enable the interconnection of V2G AC systems are not yet needed because industry stakeholders are not developing products or services requiring such policies. During the December 17, 2019 workshop, some stakeholders specifically addressed this and raised questions over whether the OEMs' current product plans include full V2G services, and, if so, in what time frame. VGIC can confirm that at least some OEMs have tested operational V2G AC demonstration vehicles, and some have product plans that include full V2G services within a five year time horizon. Any further delay to the development of interconnection pathways for V2G AC systems may unnecessarily hinder such plans. The Commission and this subgroup have built important momentum towards developing a well-defined interconnection pathway that can signal to OEMs that they should continue their product plans for V2G AC systems. As such, VGIC asserts that

continued action within this subgroup is required and aligns with the PEV industry stakeholders' proposal to reconvene work in mid-2020. The mid-2020 reconvening is necessary to ensure that final Rule 21 tariff language can be adopted within the next few years, and match OEMs' product development targets.

B. Comments on Recommendation 2: Consider Jurisdictional Questions Regarding OEM Internal Testing

OEMs, including VGIC members, have expressed general concerns about the practicality of meeting third-party, testing requirements (*i.e.*, performed by a Nationally-Recognized Testing Laboratory ["NRTL"]) for on-board inverters including both UL 1741 and a forthcoming IEEE 1547.1-2020. As described in the Final Report, such practices, which may be the norm for stationary solar PV inverters, are not a good fit for the OEM manufacturing process and vehicle development cycle. OEMs generally apply extremely rigorous testing procedures for meeting vehicle safety and product reliability standards; however, these are typically conducted through internal procedures. Requiring third-party testing on a regular basis would place immense administrative and logistical burdens on all parties and act as a barrier to V2G market development. VGIC believes that the Final Report adequately expresses OEM norms around internal testing and effectively describes the nuances of the dynamic, competitive automotive industry. Despite these concerns, OEMs are committed to ensuring grid safety and reliability for interconnected vehicles and developing methods that communicate compliance to adopted standards. Moreover, VGIC recognizes that the Commission and investor-owned utilities ("IOUs") would like to understand possible mechanisms to review and approve validation results from OEM internal testing procedures as a means to ensure grid safety and reliability for interconnecting V2G AC devices. The VGIC has considered several potential pathways and

practices that might be helpful in this regard, as reviewed below. Note that these ideas are still evolving and should not be interpreted as formal recommendations from any VGIC member company. Additional stakeholder discussion is needed for each.

1. **CPUC Validation Process**: Stakeholders could collaborate to establish a method that allows the Commission to obtain "validation certificates" which confirm compliance with the robust protocols executed by the OEMs in their adherence to SAE and other relevant internal testing protocols.
2. **Federal Validation Process**: In lieu of the CPUC serving as a validation entity, this task could also be performed by a Federal entity. This concept was discussed at the December 17, 2019 workshop and VGIC has begun exploring solutions to the interconnection standards issues at the Federal level. The National Highway Traffic Safety Administration ("NHTSA") audits complete vehicles to ensure OEMs have met Federal Motor Vehicle Safety Standards ("FMVSS"). An interim step could be taken prior to the July 2020 update to explore the possibility of adding V2G interconnection standards to NHTSA's scope through the FMVSS process. VGIC also notes that this sort of process could potentially establish a national framework for V2G interconnection that would help provide consistency in markets outside of California. The December 17, 2019 workshop also included questions on whether the Federal Energy Regulatory Commission ("FERC") is a candidate for Federal validation, though VGIC believes FERC is likely not well-equipped to serve this role at present.
3. **IOU Uniform Data Request**: Another option entails an IOU requesting to review relevant datasets and/or test reports from the OEMs' internal testing process. Several

OEMs retain robust records from all vehicle testing. However, this information is generally kept confidential. It may be appropriate for a uniform request to be made to all OEMs detailing how to confidentially and securely provide this information to IOUs for purposes of certifying compliance with applicable V2G AC interconnection standards. It may be appropriate for the Commission to have a role in shaping this type of request, such that it is amenable to both the IOUs and OEMs needs.

4. **UL 9741 as the Relevant Third-Party Standard**: While UL 9741 is not yet a published standard for V2G AC-capable EVSE, there was wide acknowledgement in the Final Report and at the December 17, 2019 workshop that it could readily be developed for the purposes of interconnecting V2G AC systems. The further development and subsequent release of UL 9741 could adequately address both the IOUs' grid safety requirements and the OEMs' issues with third-party certification. Under a future where UL 9741 serves as a standard for bi-directional EVSE (either for off-board or split inverter configurations), IOUs can certify the stationary V2G AC EVSE through a third-party NRTL and OEMs can continue their robust internal testing protocols for their vehicles. VGIC recommends that the Commission indicate directly to UL that it should begin the development process for UL 9741 prior to the July 2020 update. The concurrent timing of SAE J3072 and UL 9741 revisions will allow OEMs' design and engineering teams to continue apace with V2G AC product development and deployment.
5. **OEMs as a NRTL**: A possibility some OEMs could explore is pursuing certification as a NRTL. Testing labs operated internally by many OEMs have similar test equipment, calibration requirements, and qualification protocols as NRTLs. As such,

some OEMs may be able to provide data output and test results that are consistent with the approach offered by NRTLs. There is some precedent for this approach, and OEMs have had certification approved for specific subsets of tests through collaborations with federal agencies and research labs.

VGIC would like to emphasize that these options represent a limited subset of potential paths forward. VGIC would like to continue discussion on these options as well as explore other options not listed above.

III. CONCLUSION

VGIC appreciates the opportunity to submit these comments in response to the Final Report and the December 17, 2019 workshop. We look forward to further collaboration with the Commission and stakeholders on this initiative.

Respectfully submitted,

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